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FARMING WITH BLUEGRASS

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This bulletin is a joint contribution from
Division of Farm Economics of the Kentucky Agricultural Experiment Station,
W. D. NICHOLLS, Head,
and
Division of Farm Management and Costs of the Bureau of Agricultural Economics, United States Department of Agriculture,
M. L. WILSON, in charge.

BULLETIN NO. 259

Farming with Bluegrass

By J. B. HUTSON and E. L. LANGSFORD

INTRODUCTION

The Kentucky bluegrass area proper, known as the Bluegrass Region of Kentucky, is composed of about fifteen counties in central Kentucky of which Fayette, Woodford, Clark, Bourbon and Jessamine are the most prominent. In this bluegrass area the extent to which it is desirable to utilize the land for bluegrass and the most effective utilization of this bluegrass are important considerations.

In central Kentucky bluegrass is a crop which yields fairly definite returns. Bluegrass pasture, alone or with feeds, will maintain live stock and put on gains. Much of the bluegrass yields returns in the form of seed. In 1923, the direct returns were determined for 2,770 acres of bluegrass in central Kentucky.[1]

These returns were measured in pounds of gain put on beef cattle and bushels of bluegrass seed. The quantity returns were reduced to values by applying the price at which the beef cattle were bought and sold[2] and the prices at which bluegrass seed

[1] The Department of Farm Economics of the Agricultural Experiment Station of the University of Kentucky and the Bureau of Agricultural Economics of the U. S. Department of Agriculture undertook in the spring of 1923 to encourage and assist farmers with bluegrass areas in central Kentucky in keeping accurate records as to the returns from their land in bluegrass. Fifteen farmers in cooperation with these agencies kept accurate records as to the returns from lands in bluegrass in 1923. The area in bluegrass on these farms ranged from 47 to 528 acres, the total of the fifteen being 2,770 acres. These bluegrass areas are located in the central bluegrass section in Fayette, Woodford, Clark and Bourbon counties.

[2] When cattle were put on or taken off bluegrass without being bought or sold the values were determined on the basis of the prices at which similar cattle were being transferred in the localities. In all cases the weights were accurately determined when the cattle were put on and taken off bluegrass.

was sold and deducting the expenses incident to handling the beef cattle and harvesting the bluegrass seed.

The gains put on beef cattle ranged from 7 to 182 pounds per acre, the average being 57.3 pounds per acre. The bluegrass seed yield ranged from 3.6 bushels to 12.5 bushels per acre, the average being 6.5 bushels per acre. The value of these gains in 1923 ranged from $3.61 to $17.45 per acre, the average being $12.01 per acre. This average was about 6 per cent on the estimated market value of the land.

The main factors affecting these variations were the prices at which the beef cattle were bought and sold, the time the cattle were turned on and taken off bluegrass and the yield of bluegrass seed.

In 1923 the gains and value of gains put on beef cattle appear to have been slightly less than normal. The yield of bluegrass seed appears to have been slightly above normal. The price of bluegrass seed appears to have been about normal. A careful consideration of these data along with 1923 season and prices and normal seasons and prices is indicative, within reasonable limits, of what may be expected from land in central Kentucky in bluegrass handled in this way.

Bluegrass is most profitable when grown in a rotation with other crops. The best quality of Burley tobacco usually is grown after bluegrass. In most cases the most economical method of seeding the bluegrass is with clover in small grain. A long rotation system with tobacco or corn one or two years, small grain one year, clover one year and bluegrass from 6 to 8 years has many advantages for the central Kentucky farmer.

Part I.

Returns from Bluegrass

COMMON SYSTEMS OF CROP ROTATION IN CENTRAL KENTUCKY

A considerable part of the land in central Kentucky is held in comparatively large tracts. For example, about 40 per cent of the farm land in Fayette, Bourbon, Clark, Woodford and Jessamine counties is held in tracts of 260 acres or larger and about 20 per cent in tracts of 500 acres or larger. A common rotation on these large farms is bluegrass from six to eight years, white burley tobacco or corn one or two years, small grain one year, and clover one or two years. The bluegrass usually is sown in the small grain with clover. A small acreage of the clover usually is cut for hay and the remainder pastured. During the second year the clover disappears and then the land is left in bluegrass from five to eight years.

When the bluegrass is turned under the more fertile areas are planted in burley tobacco for one or two years and then in small grain. The less fertile areas are planted in corn for one or two years and then in small grain. The small grain may be either cut, threshed and marketed, or pastured, depending upon the yield and price outlook and the need for pasturage in the early spring. The need for corn on these large farms is relatively small and often some of this is purchased. Considerable corn is shipped into the bluegrass area. Thus on these large farms we usually have from five to ten per cent of the acreage in burley tobacco, a slightly larger acreage in corn, from eight to fifteen per cent in small grain, from ten to twenty per cent in clover, most of which is pastured, and the remainder in bluegrass.

On the smaller farms generally a shorter crop rotation is followed. A common rotation for these farms is corn or tobacco one year, small grain one year, clover and timothy two years. Often a small part of the farm is left for bluegrass which is

Fig. 1.—Stripping Bluegrass Seed on a Central Kentucky Farm.

handled in the same manner as in the longer rotation previously mentioned.

Within recent years many of these smaller farms, with the shorter rotations, have experienced considerable difficulty in growing burley tobacco of the best quality. It is believed that bluegrass in some way causes a better quality of tobacco.

COMMON PRACTICES IN HANDLING BLUEGRASS PASTURES

Bluegrass makes some growth in practically every month of the year. In early spring and late fall its growth usually is luxuriant. In central Kentucky it usually has made considerable growth before April 1, and affords good pasturage until December 1. It is utilized for seed and pasturage or for pasturage alone. Either the pasturage or the seed may be made the main consideration, depending chiefly upon the season, the quantity of bluegrass seed, the price outlook and the quantity and kinds of weeds in the bluegrass. (See Fig. 1.)

If seed is made the chief consideration the bluegrass is not pastured or is pastured lightly before stripping. The stripping season usually starts from May 25 to June 10 and lasts five to ten days. The seed may be sold standing in the field, hired stript, or stript on the share basis. If stript on the share basis, from two-fifths to one-half is given for all labor and expenses incident to stripping, curing and marketing. The bluegrass may be pastured quite heavily from the stripping season until the dry, hot season of summer (usually beginning about July 1 to 15), then lightly until about the middle of September and then heavily until the middle or latter part of December. During years with an open winter bluegrass affords some pasturage thruout the winter. If handled in this way bluegrass may be expected during most years to return from five to fifteen bushels of seed per acre in addition to the pasturage.

If pasturage is the chief consideration, bluegrass usually is pastured heavily from April or early May until the hot summer season, following which it is pastured as already indicated for the remainder of the season. Good bluegrass pastured fairly heavily before stripping usually returns from three to eight

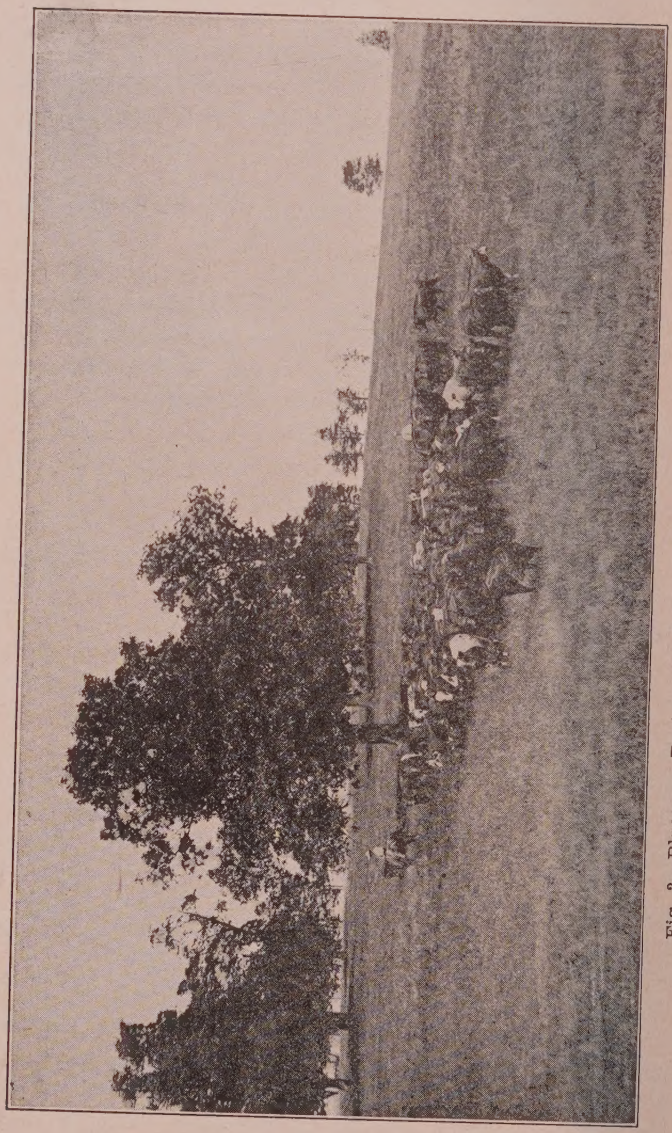

Fig. 2.—Bluegrass Pastured by Beef Cattle on a Central Kentucky Farm.

bushels of seed per acre in addition to the pasturage. If handled in either way the number of live stock on it is reduced at times during the year or else other pasture is utilized.

Usually the bluegrass seed crop is harvested on a considerable scale in only four or five of the central bluegrass counties. As a rule the other counties utilize the bluegrass almost entirely for pasturage.

The principal kinds of live stock utilizing bluegrass pasture in this area are breeding horses, including thoroughbred and standardbred horses, sheep, dairy cattle and beef cattle. In this study beef cattle were selected because the returns from beef cattle are more easily determined than are those from most other classes of live stock.

COMMON PRACTICES IN HANDLING BEEF CATTLE ON FARMS WITH BLUEGRASS

In central Kentucky beef cattle to be pastured on bluegrass usually are brought to the farms in September or October. Usually long yearlings or short two-year-olds weighing from 800 to 1,000 pounds and classed as "good feeders" are shipped into the area from Tennessee or the St. Louis market during these months. Some are bought locally. They may be purchased directly by the farmer or thru local stock dealers.

These cattle are put on bluegrass as soon as bought and are allowed to remain without other feed until the middle or latter part of December. From late December until about March 1 they are fed a maintenance ration of stover and other roughage with a little corn. Beginning about March 1 they are fed rather heavily on corn on a limited pasture area or silage and corn in the barn until put on pasture from April 20 to June 1. This spring feeding is called by cattle men "warming up."

Sometimes the cattle go directly to bluegrass after this warming up process and sometimes they go first to young rye or clover and then to bluegrass, this depending upon the season, the relative availability of feed and young rye or clover, other live stock on hand, the bluegrass seed outlook and the previous experience of the individual cattle man. In recent years there is

a tendency to feed slightly more heavily and later in the spring than formerly. These cattle, bought in September and October, usually are sold from July 1 to September 1 of the following year as "grass fat" cattle, ranging in weight from 1,200 to 1,450 pounds and classed on market as "good steers." Most of these cattle are sold directly or thru local dealers to the eastern markets.

RETURNS FROM BEEF CATTLE AND BLUEGRASS SEED

The net returns from bluegrass seed, beef cattle and other sources are shown in Table 1. These returns are presented on the per acre basis for each of the 15 bluegrass areas from which data were obtained.

TABLE I.—The Returns from Beef Cattle and Bluegrass Seed
(Acre Basis)

1	2	3	4	5	6	7	8	9	10	11
Farm No.	Estimated Value of Land	Total Pasture Days Per Acre	Total Cattle Gains, Lbs.	Net Value of Total Cattle Gains	Returns Other Sources	Bushels Seed Per Acre	Net Returns Bluegrass Seed	Total Net Returns	Opportunity Rental	Per Cent Return on Estimated Value of Land
14	$200	103	61.0	$14.06	$0.60	7.5	$6.58	$20.90	$10.00	10.4
9	200	92	62.0	3.32	.....	12.5	14.47	17.45	10.00	8.7
5	200	105	51.0	7.80	.....	8.2	9.20	16.66	10.00	8.3
6	200	12	9.3	3.13	.....	11.0	12.60	15.39	10.00	7.7
8	200	42	58.0	7.63	.....	6.5	6.84	14.13	10.00	7.1
11	200	52	61.6	2.33	.84	9.4	10.75	13.58	10.00	6.8
4	200	52	56.9	9.25	.....	4.5	4.03	12.94	10.00	6.5
2	200	80	87.0	7.00	.....	6.8	6.17	12.83	10.00	6.4
3	185	59	7.0	—.15	.....	9.2	11.59	11.10	8.00	6.0
7	200	32	9.3	2.80	.....	7.5	8.40	10.86	10.00	5.4
1	200	58	38.1	4.75	1.87	5.4	3.02	9.29	10.00	4.6
12	175	121	182.0	5.62	.....	3.6	3.46	8.73	8.00	5.0
13	175	80	160.0	4.50	.....	4.2	2.14	6.30	8.00	3.5
15	140	52	21.2	4.48	1.75	.....	.....	5.89	6.00	4.2
10	190	108	40.1	3.85	.....	.....	.....	3.51	9.00	1.8
Ave.	$191	62	57.3	$5.53	$0.03	6.5	$6.45	$12.01	$9.26	6.3

3. "Total Pasture Days Per Acre" includes the pasture days for all beef cattle and other live stock. This represents the number of days of pasturage furnished by each acre to a mature animal during the season.

4. "Total Cattle Gains" represents the difference in the weights of all cattle when turned on bluegrass and the weights when turned off bluegrass divided by the number of acres in the area.

5. "Net Value of Total Cattle Gains" represents the difference between the purchase or estimated value of all cattle when turned on bluegrass, plus the expenses incident to caring for the cattle (in some cases this included a small amount of feed), and the sales or estimated value when

turned off bluegrass, divided by the number of acres in the area. Actual sales or opportunity sales prices were taken.

6. "Returns Other Sources" represents actual returns received when some of the areas were rented out for other live stock, or opportunity returns when utilized by live stock from which weights and prices on and off the bluegrass could not be obtained.

8. "Net Returns Bluegrass Seed" represents the sale price of the seed, less the cost of harvesting and marketing, divided by the number of acres in the area.

9. These bluegrass areas are listed in the order of the total net returns per acre, beginning with the highest. The "Total Net Returns" per acre were computed by adding the net value of the cattle gains, returns from other livestock and the net returns from bluegrass seed (columns 5, 6 and 8) and deducting the charges for the fences and upkeep of the bluegrass area. This fence and upkeep charge was $0.34 per acre in 1923.

10. "Opportunity Rental" is the figure at which similar bluegrass in the locality rented in 1923.

11. "The Per Cent on the Estimated Value of Land" is the percentage the total net return (column 9) is of the estimated value of the land (column 2).

As stated above, beef cattle usually are turned on bluegrass in April, May or June and sold in July or August. In 1923 cattle were handled in this way on nine of the fifteen farms. On the other six farms the cattle were turned on bluegrass in April and May and sold in September, October and November. On most of the farms that sold the cattle in July or August another drove was bought in September or October and kept on bluegrass in the late fall and early winter. In most instances the cattle on bluegrass in the late fall and early winter were on the same areas as the cattle on bluegrass in the spring. Cattle on bluegrass from spring to fall utilized practically all the pasturage for the spring, summer and fall seasons on the areas to which they had access.

The gains put on beef cattle ranged from 7 to 182 pounds per acre for the season, the average being 57.3 pounds per acre. The areas from which smaller gains were obtained were not pastured before the seed was stript and, in most cases, were pastured with large, half-fat cattle that were sold in July and August. The bluegrass seed was made the chief consideration on these farms.

The areas showing the larger gains were pastured heavily from early in the spring until late in the fall. The same cattle were held on these areas thruout the entire grazing season and, in most cases, these cattle were unusually thin when turned on bluegrass in the spring.

With the prices prevailing in 1923 the total net value of the gains on beef cattle ranged from $2.33 to $14.06 per acre, the average being $5.53 per acre. There does not appear to be a constant relation between pounds of gain and value of gain. Some farmers get small gains in pounds and large returns in dollars because they give more attention to buying on low markets and selling on high markets than they do to providing cattle to utilize bluegrass as it is available. The farmer, in attempting to secure the largest possible returns from a given pasture area, must take into account the condition of his cattle and the market situation on the one hand and the utilization of the bluegrass on the other.

The bluegrass seed was stript from thirteen of these fifteen bluegrass areas, the acreage stript being 2,595 of the total 2,770 acres. The yield on the acreage stript ranged from 3.6 to 12.5 bushels per acre, the average yield, including all the bluegrass acreage on which records were kept, being 6.5 bushels per acre. The average net returns from bluegrass seed were $6.45 per acre.

The total net returns from all sources ranged from $3.61 to $20.90 per acre, the average net returns being $12.01 per acre. The areas that showed the highest net returns per acre were areas upon which the bluegrass was handled in such a way as to get good returns from seed as well as to utilize the pasturage. In general those that received the highest net returns per acre pastured lightly before stripping.

The following notes suggest some of the reasons for the variations from farm to farm in 1923. The notes are arranged in the same order as the data in Table 1. That is, the notes for the farms with the highest "net returns per acre" are placed first.

Farm No. 14. Pastured heavily before stripping. Stript on shares, gave two-fifths instead of one-half for stripping. Good grade cattle. Fair gains. Sold in August for October delivery. Well sold. Only one drove.

Farm No. 9. Pastured lightly before stripping. Exceptional pasture. Good yield of seed. Cattle held until December. Fair gains. Only one drove.

Farm No. 5. Pastured lightly before stripping. Good yield of seed. Good grade cattle. Fair gains. Sold in August. Two droves of feeders after first cattle came off. Small gains on last two droves.

Farm No. 6. Not pastured before stripping. Cattle large and half fat. Sold in August. Small gains. Well sold. Second drove cattle fed on pasture but no gains allowed for grass.

Farm No. 8. Pastured lightly before stripping. Fair returns from seed. Good gains on cattle. Second drove of cattle September to December. Small gains.

Farm No. 11. Pastured lightly before stripping. Good returns from seed. Cattle bought high. Second drove of cattle made small gains.

Farm No. 4. Pastured lightly before stripping. Cattle held until October. Fair gains. Sold in August for October delivery. Second drove of cattle fed on pasture but no gains allowed for grass.

Farm No. 2. Pastured lightly before stripping. Medium grade cattle. Fat cattle graded out and sold in August. Others graded out and sold in October. Some held until December. All considered one drove. Good gains.

Farm No. 3. Not pastured before stripping. Stript seed cheaply. Cattle sold in August. Small gains. No gains from second drove of cattle.

Farm No. 7. Not pastured before stripping. Good yield. Cattle large, and half fat. Sold in August. Small gains. Well sold. No gains from second drove of cattle

Farm No. 1. Pastured heavily before stripping. Stript on shares. First cattle sold in July. No gains from second drove of cattle. Part of pasture rented for other stock.

Farm No. 12. Pastured heavily before stripping. Cattle thin. On pasture from May until December. Exceptional gains. Only one drove of cattle.

Farm No. 13. Pastured heavily before stripping. Seed stript on shares. Cattle thin when put on bluegrass. Fat cattle graded out and sold in August. Some held until December. All considered one drove.

Farm No. 15. No seed stript. Cattle on from May 1 to July 14. Good gains. Well sold. Only one drove. Pastured with other live stock.

Farm No. 10. No seed stript. Pastured heavily. First cattle sold in July. Then heifers on for one month. Fair gains on heifers. Feeders on from October to December. No gains.

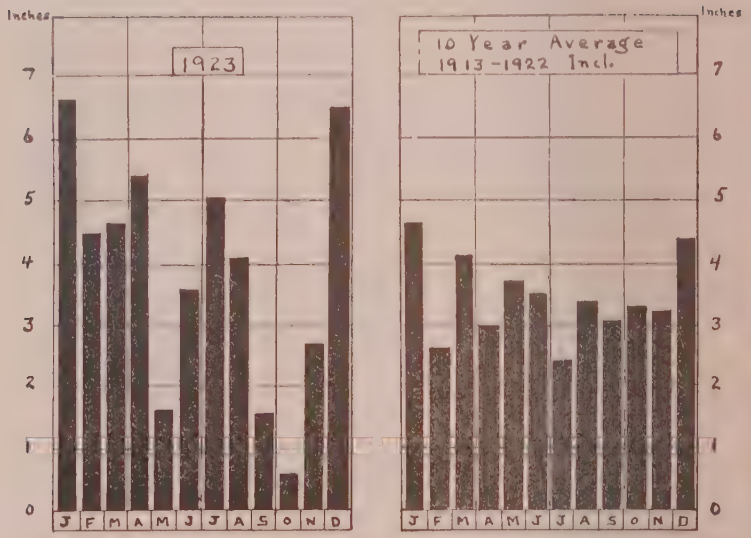

Fig. 3.—Rainfall, by months, for 1923 and average for the previous ten-year period.

THE SEASON OF 1923 AS RELATED TO NORMAL[3] SEASONS

Before data of this kind can be used in making plans and anticipating returns the extent to which they represent normal returns must be considered. In this case the seasonal variations of 1923 from normal seasons and the relation of gains and prices of beef cattle and yields and prices of bluegrass seed in 1923 to normal yields, gains and prices are considered.

The monthly distribution of rainfall for 1923 and the average for the previous ten-year period are shown in Figure 3. Considering only the growing season it appears that the rainfall was unusually heavy in 1923 during March, April, July and August and unusually light during May, September and October. (See Fig. 3.)

The monthly mean temperature for 1923 and the average for the previous ten-year period are shown in Fig. 4. It was slightly colder than usual during February, March, April and

[3] The word "normal" as used in this bulletin implies the long-time average.

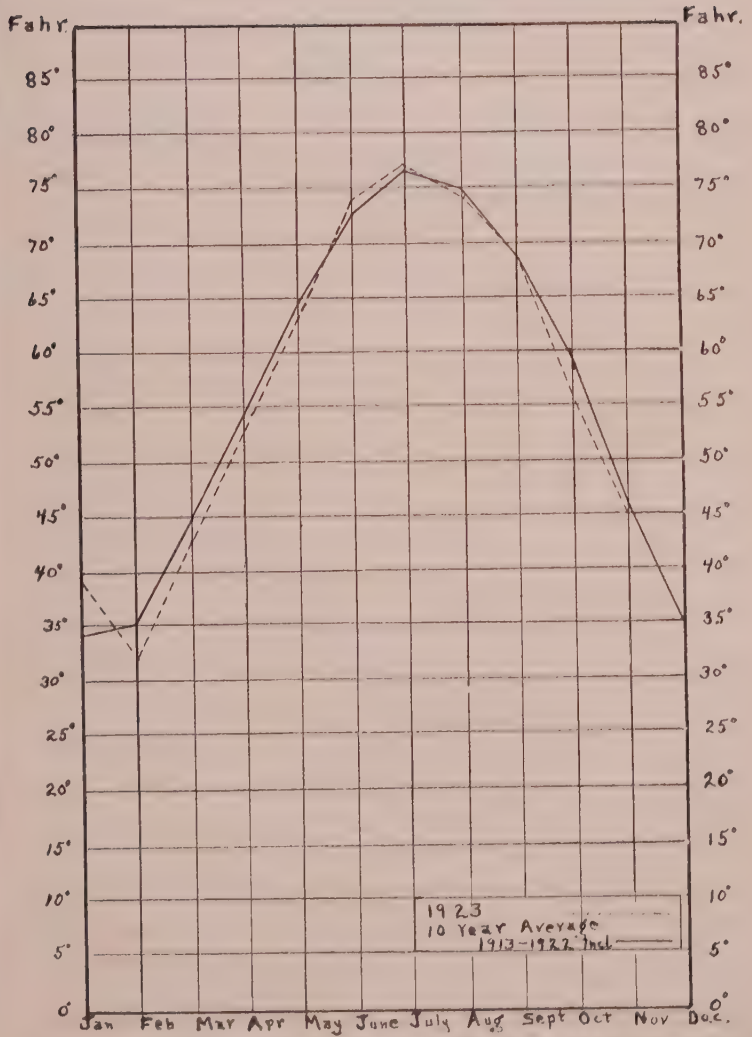

Fig. 4.—Monthly mean temperature for 1923 and average for the previous ten-year period.

May and slightly warmer than usual during January and December. This chart does not actually reflect all the unusual temperature variations for 1923. Both in the spring (April and May) and the late fall (November and December) there were sudden and unusual changes in temperature. By actual observation it appeared that vegetation was from ten to fourteen days late in coming out in the spring and that live stock on bluegrass stopped gaining much earlier than usual in the fall. (See Fig. 4.)

RETURNS FROM BEEF CATTLE ON BLUEGRASS IN 1923 AS RELATED TO NORMAL RETURNS

Gains in Pounds.—The gains put on beef cattle on bluegrass seem to have been slightly less than normal in 1923. As has been pointed out, the spring of 1923 was unusually late. Bluegrass did not make its usual growth in early spring, but with the coming of warm weather and the excessive rains of April and May, the growth was unusually rapid. The opinion of experienced cattle men was that the spring bluegrass was inclined to be "washy" and that the cattle pastured in the spring fattened more slowly than usual.

The usual dry season of August and September seemed to have been moved forward somewhat and reflected in the dry season of October and November. Bluegrass made good growth and cattle on bluegrass good gains thru the summer period.

In most cases the cattle pastured during the usual fall season, from October to December, showed practically no gains in 1923. Beef cattle put on good gains thru late September, October and early November. In most cases after November 15 they appeared to lose rapidly and by the time they are usually put on stover they had lost practically all the early fall gains. This is reflected in data from a Fayette county cattle man who weighed on the first of each month. On this farm the cattle were bought and put on pasture during the last days of September. The monthly weights were as follows:

October 1. Cattle on bluegrass. Total weight..... .....62,880 lbs.
November 1. Cattle on bluegrass (1 died). Total weight 66,280 lbs.
December 1. Cattle on bluegrass. Total weight .... 66,240 lbs.
January 1. Cattle on bluegrass. Total weight .... 63,440 lbs.

Some cattle men attributed these late fall losses to the unusual and sudden changes in temperature in late November and December which seemed to throw the cattle "off feed." Others suggested that the late fall bluegrass lacked substance. All agreed that the cattle on bluegrass in the fall did not put on and retain normal gains.

Taking into consideration these impressions in connection with the data available it appears that the gains put on by beef cattle on bluegrass in 1923 were slightly below normal for May, June and July, considerably above normal for August and September, possibly about normal for October, and considerably below normal for November and December. The feeling on the part of most cattle men was that the total gains for the year were slightly below normal.

Prices of Beef Cattle.—Data on prices indicate that the spread in prices between feeders and fat steers was slightly less than normal in 1923. The 1923 prices and the previous three-year average prices on the St. Louis market[4] are shown in Table II. The spread between good feeders and good fat steers was less in 1923 than the average for the three previous years. Other data not tabulated indicate that the average spread from 1920 to 1922 is about the same as the spread from 1915 to 1919.

The decline in price for good fat steers came earlier in 1923 than usual. It also appears that the lower fattening qualities of bluegrass in the spring of 1923 caused many of the cattle to be held later than usual. Combining the gain in pounds and price considerations it appears that beef cattle on bluegrass in 1923 put on slightly smaller gains than usual and that any changes

[4] St. Louis prices are used because more feeder cattle coming to central Kentucky pass thru the St. Louis market than thru any other large market. While the fat cattle usually go to the eastern markets the St. Louis prices suggest the spread between feeders and fat cattle.

in the time for marketing occasioned by these smaller gains resulted in less favorable prices. It appears that the cattle fattened on bluegrass in 1923 netted slightly smaller returns than

TABLE II.—Prices for 1923 and Previous Three-Year Average Prices for "Good Feeders" and "Good Fat Steers."

Date	St. Louis Market, 1923		St. Louis Market, 3-Year Average (1920-21-22).	
	Good Feeders (750 lbs. to 1,000 lbs.)	Good Fat Steers (1,200 lbs. and Over)	Good Feeders (750 lbs. to 1,000 lbs.)	Good Fat Steers (1,200 lbs. and Over)
May 15	$7.47	$9.74	$7.41	$9.84
Aug. 15	6.50	11.00	7.19	11.50
Sept. 15	6.50	11.10	7.12	11.45
Oct. 15	6.00	10.70	6.87	11.57
Dec. 15	5.88	10.46	6.38	9.75

Spread between good feeders, May 15, St. Louis market, and good fat steers, August 15, for 1923, $3.53; for three-year average, $4.09.

Spread between good feeders, May 15, and good fat steers, October 15, for 1923, $3.23; for three-year average, $4.16.

Spread between good feeders, September 15, and food feeders, December 15, for 1923, $0.62, decline in price; three-year average, $0.74, decline in price.

Price data from "Weather Crops and Markets," U. S. D. A.

usual. These conclusions are in line with the general feeling of live stock men in the area that beef cattle was one of the least profitable classes of live stock utilizing bluegrass in 1923.

RETURNS FROM BLUEGRASS SEED IN 1923 AS RELATED TO NORMAL RETURNS.

Yield of Bluegrass Seed.—The season of 1923 seemed favorable for bluegrass seed production. A relatively large acreage of bluegrass seed was harvested, with yields per acre equal to or possibly slightly above a long-time average. The total bluegrass seed production in Kentucky in 1923 was considerably above a long-time average. However, the yields for

the areas upon which records were kept were slightly less than seven bushels per acre while the consensus of opinion of bluegrass men seems to be that from seven to eight bushels per acre is a normal yield. It is possible that the areas upon which records were kept were pastured more heavily than is usual, considering the entire area from which seed is stript. Then it is possible that the generally accepted average yield is slightly above the yields actually obtained from the present bluegrass, considering the poor along with the good bluegrass seasons. Considering the total production data along with impressions gained from men in the field it appears that the yields of bluegrass seed on the areas from which data were obtained were slightly above normal in 1923.

Prices of Bluegrass Seed.—The prices received by Kentucky growers for bluegrass seed, by years, from 1910 to 1923, are shown in Table III.[5]

TABLE III.—Prices Received by Growers for Kentucky Bluegrass Seed from 1910 to 1923.

Date	Prices for Cured Seed Per Bu.
1910	$1.25—$1.60
1911	1.65— 1.75
1912	.55— .70
1913	.60
1914	.45
1915	.60
1916	.70
1917	1.40— 1.65
1918	1.50
1919	1.50— 1.75
1920	1.75— 1.85
1921	2.15— 2.25
1922	1.25— 1.50
Approximate 13-year average	$1.24
1923 average	1.30

These data indicate that the bluegrass seed prices were about normal in 1923. Then, with the yields slightly above normal,

[5] Prices for the years 1910 to 1922 were taken from Bulletin 247, Kentucky Experiment Station. Prices for 1923 were taken from the farms from which these bluegrass records were obtained.

it appears that the net returns per acre for bluegrass seed were slightly above normal in 1923. This conclusion is in line with the feeling of bluegrass men generally, that 1923 was a profitable year for bluegrass seed.

Summing up these considerations it appears that in 1923 the returns from beef cattle were slightly below normal and the returns from bluegrass seed slightly above normal. While it does not appear that the season and price conditions were unusually favorable for bluegrass areas pastured by beef cattle in 1923, it is possible that the men who cooperated on this project are above the average in ability to handle bluegrass areas profitably. Possibly the bluegrass areas on which records were kept were slightly better than the average in central Kentucky. However, no effort was made to select the better bluegrass areas or the unusually successful farmers as cooperators. In any event these data seem to indicate that bluegrass is a good crop for a good farmer.

Part II.

Bluegrass in a Profitable Farming System in Central Kentucky

The organization of a 586-acre bluegrass farm as it has been operated during 1922, 1923 and 1924 and a proposed organization of a 400-acre farm are shown in the following pages. The returns shown for the 586-acre farm are those actually obtained with the prices of these years.

A 586-ACRE BLUEGRASS FARM

Resources Available.—This farm consists of 586 acres of good bluegrass land. There are barns for 33 to 40 acres of tobacco, 3 tenant houses, stock barn and silo and machine shed. The investment in buildings other than the residence is between $7,000 and $8,000. The investment in machinery is between $2,000 and $2,500.

This farmer usually keeps from 5 to 8 head of work stock, about 120 ewes and 5 bucks, 10 brood sows and 2 dairy cows. He usually buys each fall from 75 to 100 pigs weighing from 100 to 125 pounds and about 100 head of small cattle weighing from 450 to 600 pounds.

The market value of this land is about $175 per acre without buildings. The total investment, including a $15,000 residence, is about $135,000.

The work on this farm is done by the operator, 2 regular hired men, 3 tobacco tenants and extra labor in stripping bluegrass seed, baling straw, cutting and husking corn and filling the silo.

The beef cattle handled on the 586-acre farm were lighter than those usually handled in central Kentucky. They were lighter than those suggested for the 400-acre organization shown later. In recent years light, well bred cattle appear to have made considerably larger returns for the pasturage used than

heavy cattle. It is possible that taking one year with another most central Kentucky farmers will find light, well bred cattle making larger returns than heavy cattle. On the other hand prices may favor one for a series of years and then the other for a time.

Expenses and Receipts.—The expenses and receipts for this farm for 1922, 1923 and 1924 are shown in Table IV.

TABLE IV.—Expenses and Receipts of a 586-Acre Bluegrass Farm for 1922, 1923 and 1924.

RECEIPTS	1922	1923	1924
Live-stock sales	$14,783.96	$15,426.43	$10,899.44
Crop sales	11,839.52	10,000.67	8,929.65
Miscellaneous sales	823.00	59.00	183.50
Increase live stock on hand	.....	1,224.00	123.00
Increase feed and supplies on hand	.....	782.00	.....
Increase other resources on hand	.....	1,025.00	558.50
Total	$27,446.48	$28,517.10	$20,694.09
EXPENSES			
Live stock bought	$8,424.40	$11,668.49	$5,850.30
Feed bought	499.00	769.00	848.13
Other live stock expense	148.00	285.00	165.08
Labor	1,294.00	1,505.00	1,448.47
Seed	523.00	427.00	324.96
Other crop expenses	646.00	322.00	66.47
Building and fence repairs	25.00	697.00	168.25
Miscellaneous expenses	1,173.00	516.00	1,263.86
Taxes and insurance	1,748.00	1,608.00	1,554.65
Decrease live stock on hand	701.00	.....	.....
Decrease feed and supplies on hand	381.00	.....	616.38
Decrease other resources on hand	356.00	.....	.....
Total	$15,918.40	$17,797.49	$12,306.55
Excess receipts over expenses	$11,528.08	$10,719.61	$8,387.54

Details of Organization.—The production of crops and live stock on this farm and the disposition of them are shown in Table V.

TABLE V-A—Crops Grown.

	1922			1923			1924		
	Acres	Yield Per Acre	Production	Acres	Yield Per Acre	Production	Acres	Yield Per Acre	Production
Corn	47	39.1 Bu.	1,840 Bu.	44	53.2 Bu.	2,340 Bu.	48.0	40.2 Bu.	1,928 Bu.
Wheat	126	14.6 Bu.	1,835 Bu.	64	21.4 Bu.	1,368 Bu.	64.0	19.0 Bu.	1,219 Bu.
Hay	38	1.5 T.	57 T.	38	1.7 T.	64 T.	38.0	1.2 T.	46 T.
Tobacco (tenant's)	32	1411.1 Lbs.	45,154 Lbs.	34	1,293.9 Lbs.	43,994 Lbs.	26.6	1,220.2 Lbs.	32,456 Lbs.
Tobacco (operator's)	....	.....	.....	....	.....	.....	3.8	1,186.8 Lbs.	4,510 Lbs.
Barley	13	14.6 Bu.	190 Bu.	....	.....	.....	.....	.....	.....
Oats	20	Failed	.....	—	.....	.....	.....	.....	.....
Sorghum silage	....	.....	.....	9	22.2 T.	200 T.	9.0	13.3 T.	120 T.
Corn silage	14	13.6 T.	190 T.	....	.....	.....	.....	.....	.....
Bluegrass	223*	6.9 Bu.	1,528 Bu.	194*	8.1 Bu.	1,575 Bu.	212.0‡	8.0 Bu.	**1,700 Bu.
Orchard grass	36*	10.3 Bu.	370 Bu.	68‡	.....	Pastured	160.0	.....	Pastured
Clover pasture	....	.....	.....	108	.....	Pastured	.....	.....	.....
To tenants	14	.....	.....	8	.....	.....	14.0	.....	.....
Yard and lawn	6	.....	.....	6	.....	.....	6.9	.....	.....
Waste (roads, lots, etc.)	17	.....	.....	13	.....	.....	4.6	.....	.....

*Stript for seed and pastured.
†Pastured only.
‡Only 200 acres stript.
**This is on green seed basis; seed was sold before curing.

TABLE V-B.—Disposition of Crops, 1922.

	Total Production	Amount Fed	Amount Sold	Amount Bought	Decrease on Hand	Increase on Hand
Wheat	1,835 Bu.	85 Bu. (Seed)	1,750 Bu.	.....	.....	.....
Straw	108 T.	14 T.	88 T.	.....	.....	6 T.
Mixed hay	57 T.	19.5 T.	39.5 T.	2 T.	.....	.....
Oat hay	.....	8 T.	.....	.....	8 T.	.....
Tobacco (Tenant's)	45,154 Lbs.*	.....	45,154 Lbs.*	.....	.....	.....
Corn	1,720 Bu.†	2.141 Bu.	.....	325 Bu.	96 Bu.	.....
Barley	190 Bu.	190 Bu.	.....	.....	.....	.....
B. G. seed	1,528 Bu.	.....	1,528 Bu.	.....	.....	.....
Corn silage	190 T.	125 T.				65 T.

Disposition of Crops, 1923

	Total Production	Amount Fed	Amount Sold	Amount Bought	Decrease on Hand	Increase on Hand
Wheat	1,368 Bu.	90 Bu. (Seed)	1,278 Bu.	.....	.....	.....
Straw	37 T.	13.5 T.	21.5 Bu.	.....	.....	2 T.
Mixed hay	64 T.	10.5 T.	81 T.	.....	27.5 T.	.....
Tobacco T.	43,994 Lbs.*	.....	43,994 Lbs.*	.....	.....	.....
Corn	2,340 Bu.†	1,815 Bu.	.....	875 Bu.	.....	1,400 Bu.
B. G. seed	1,575 Bu.	.....	1,575 Bu.	.....	.....	.....
Corn or sorghum silage	200 T.	190 T.				10 T.

*Total tobacco production includes tenant's part.
†Does not include tenant's part.

Disposition of Crops, 1924

	Total Production	Amount Fed	Amount Sold	Amount Bought	Decrease on Hand	Increase on Hand
Wheat	1,219 Bu.	96 Bu. Sown	1,123 Bu.	.....	.....	.....
Straw	53.6	15 T.	46.6 T.	.....	8 T.	.....
Hay	46 T.	18 T.	50 T.	7.18 T.	14.82	.....
Tobacco	4,510 Lbs.	.....	4,510 Lbs.	.....	.....	.....
Tobacco (Tenant's)	32,456 Lbs.*	.....	32,456 Lbs.*	.....	.....	.....
B. G. seed	1,700 Bu.	.....	1,700 Bu.	.....	.....	.....
Corn (cut and shock)	1,370 Bu.	6 Bu. Seed 1,907 Bu.	.....	293 Bu.	250 Bu.	.....
Corn hogged	558 Bu.	558 Bu.	.....	.....	.....	.....
Sorghum silage	120	200			80	

*Total tobacco production includes tenant's part.

TABLE V-C.—Crop Sales.

	1922		1923		1924	
	Amount	Value	Amount	Value	Amount	Value
Tobacco	.....	.....	.....	.....	4,510 Lbs.	$936.20
Tobacco (Tenant's)	22,577 Lbs.*	$6,819.75	21,997 Lbs.*	$5,461.88	32,456 Lbs.*	3,571.06
Wheat	1,750 Bu.	2,012.65	1,278 Bu.	1,347.41	1,123 Bu.	1,419.81
Hay	39.5 T.	574.47	81 T.	1,108.67	50 T.	875.65
B. G. seed	1,528 Bu.	1,528.00	1,575 Bu.	1,829.06	1,760 Bu.	1,518.12
Straw	88 T.	531.38	21.5 T.	172.00	46.6 T.	608.81
Misc. crop receipts	370 Bu.†	373.27	.....	81.65‡	.....	.....
Total		$11,839.52		$10,000.67		$8,929.65

*Tenant's tobacco, includes operator's part only.
†Orchard grass seed.
‡Received for pasture rented out.

	Corn Bu.	Barley Bu	Corn Silage Tons	C. S. Meal Tons	Mill Feed Tons	Mixed Hay Tons	Oat Hay Tons	Straw Tons
Beef cattle	.....	.....	125	2*	.....	.....	.....	9.75
Hogs	1.711	190	.....	.....	1*	.....	.....	.5
Work stock	417	.....	.....	.....	.....	11.8	7.25	2.25
Other horses	8	.....	.....	.....	.....	2.15	.75	1.5
Dairy cows	5	.....	.....	.....	.....	3.25	.....	.....
Sheep	.....	.....	.....	.....	.....	2.26	.....	.....
Total	2.141	190	125	2*	1*	19.46	8.00	14.00

*Bought

Feed Consumed, 1923

	Corn Bu.	Oats Bu.	Corn Silage Tons	C. S. Meal Tons	Mill Feed Tons	Hay Tons	Straw Tons	Stover Shocks
Beef cattle	250	.....	188	2*	.....	.....	11.0	100
Hogs	1.295	.....	.....	.....	1	.....	.2	.....
Work stock	287	50*	.....	.....	.....	7.25	1.6	.....
Other horses	11	.....	.....	.....	.....	.75	.2	.....
Dairy cows	12	.....	2	.....	.....	1.5	.5	.....
Sheep	.....	.....	.....	.....	.....	1.0	.....	.....
Poultry	20	.....	.....	.....	.....	.....	.....	.....
Total	1.875	50*	190	3*	1	10.5	13.5	100

*Bought

Feed Consumed, 1924

	Corn	Corn Hogged	Sorghum Silage	C. S. Meal	Mill Feed	Sheaf Oats	Mixed Hay	Straw	Stover
	Bu.	Bu.	Tons	Tons	Lbs.	Tons	Tons	Tons	Shocks
Beef cattle	756	.....	196	6	.....	.....	.....	11.5	360
Hogs	861	558	.....	.....	2,800	.....	.....	.....	.....
Sheep	.....	.....	2	.....	.....	.....	.....	.....	.....
Dairy cattle	10	.....	2	.....	.....	.....	1	1.0	.....
Work stock	232	.....	.....	.....	.....	1	14.5	2.5	.....
Other horses	18	.....	.....	.....	.....	.....	2.5	.....	.....
Poultry	30	.....	.....	.....	.....	.....	.....	.....	.....
Total	1,907	558	200	6	2,800	1	18.0	15.0	360

TABLE V-E.—Live Stock Sales and Purchases, 1922

Kind of Stock	Sales			Purchases		
	No.	Lbs.	Value	No.	Lbs.	Value
Dairy cows	.....	.....	.....	1	.....	$80.00
Beef cattle	117	77,975	$5,401.85	142	78,534	5,350.60
Ewes	14	1,400	98.00	.....	.....	.....
Lambs	184	13,845	1,926.40	.....	.....	.....
Wool	.....	1,108	531.96	.....	.....	.....
Hogs	252	43,241	4,230.75	66	7,930	713.80
Work stock	10	.....	1,690.00	10	.....	1,870.00
Other horses	5	.....	905.00	4	.....	410.00
Total	.....	.....	$14,783.96	.....	.....	$8,424.40

Increase in live stock on hand from January 1, 1922, to January 1, 1923; beef cattle, 25 head, 14,441 pounds, value $1,050; dairy cattle, 1 cow, value $80.00.

Decrease in live stock on hand from January 1, 1922, to January 1, 1923; work stock, 1 mule, value $50 (1 mule died); other horses, 1 horse, value $100; hogs, 101 pigs, weight 12,625 pounds, value $1,236; sheep, 45 ewes, value $390 (17 ewes died).

Used in home, 3 hogs, weight 900 pounds, value $90.

Live Stock Sales and Purchases, 1923

Kind of Stock	Sales			Purchases		
	No.	Lbs.	Value	No.	Lbs.	Value
Beef cattle	*118	111,779	$7,024.63	165	116,584	$6,675.44
Ewes	223	.....	2,156.00	259	.....	2,576.00
Lambs	150	10,200	1,177.42	.....	.....	.....
Wool	.....	950	521.60	.....	.....	.....
Hogs	250	42,128	2,978.53	149	21,201	1,272.05
Work stock	6	.....	1,218.25	5	.....	910.00
Other horses	3	.....	350.00	2	.....	235.00
Total	.....	.....	$15,426.43	.....	.....	$11,668.49

* Includes 10 veal calves.

Increase in live stock on hand January 1, 1923, to January 1, 1924; beef cattle, 57 head, 29,350 pounds, value $2,134.00.

Decrease in live stock on hand January 1, 1923, to January 1, 1924; work stock, 1 mule, value $150; other horses, 1 horse, value $100; hogs, 2,700 pounds, value $390; sheep, 20 head, increase with decrease in value of $250 (16 ewes died).

Used in home, 8 hogs, weight 2,000 pounds, value $140.

Live Stock Sales and Purchases, 1924

Kind of Stock	Sales			Purchases		
	No.	Lbs.	Value	No.	Lbs.	Value
Beef cattle	121	86,222	$5,541.27	70	46,375	$2,768.95
Old sheep	103	.....	938.00	151	.....	1,598.00
Lambs	75	5,165	670.15	.....	.....	.....
Wool	.....	600	300.00	.....	.....	.....
Hogs	200	30,310	2,439.62	93	9,879	748.35
Work stock	6	.....	1,010.40	6	.....	735.00
Other horses	.....	.....	.....	.....	.....	.....
Total	.....	.....	$10,899.44	.....	.....	$5,850.30

Increase in live stock on hand January 1, 1924, to January 1, 1925; sheep, 49 head, value $1,615.00.

Decrease in live stock on hand January 1, 1924, to January 1, 1925; beef cattle, 18,100 pounds, value $1,285.00; hogs, 1,150 pounds; decrease value $2.00; work stock decrease value, $220.00.

Used in home, hogs, 1,150 pounds, value $135.00.

TABLE V-F.—Live Stock Production.

Kind of Stock	1922		1923		1924	
	Lbs.	Value	Lbs.	Value	Lbs.	Value
Beef cattle	13,882	$1,101.25	24,545	$2,483.19	21,747	$1,487.32
Hogs	23,586	2,370.95	20,227	1,456.48	20,431	1,824.27
Lambs	13,845	1,926.40	10,200	1,177.42	5,165	670.15
Wool	1,108	531.96	950	521.60	600	300.00

SUGGESTED ORGANIZATION FOR A 400-ACRE BLUEGRASS FARM

A suggested organization for a 400-acre blugerass farm is shown in Table VI. The cropping system suggested provides for 30 acres of bluegrass sod to be plowed each year and 30 acres seeded each year. The land would be cultivated two years, seeded to small grain, clover and bluegrass. Enough clover would be cut to provide feed and the remainder pastured. This system would permit the bluegrass to remain from 7 to 8 years.

TABLE VI.—Suggested Organization for a 400-Acre Farm with Bluegrass as One of the Principal Crops.

Crops	Acres	Yield	Total Operator's Production
Operator's tobacco	10	1,200 Lbs.	12,000 Lbs.
Tenant's tobacco (grown for one-half)	10	1,200 Lbs.	6,000 Lbs.
Operator's corn	30	48 Bu.	1,440 Bu.
Tenant's corn (grown for one-half)	10	48 Bu.	240 Bu.
Small grain (pastured)	30		
Small grain (cover crop)	30*		
Rotation pasture (clover)	20		
Hay	10	1.5 T.	15 T.
Land to tenant and hired man	12		
Waste (land around house, lots, etc.)	10		
Non-tillable pasture	30		
Bluegrass, tillable	228	6 Bu.†	1,368 Bu.
Total	400		

*Acreage in cover crop not included in total.
†Six bushels per acre is considered relatively small yield, yet possibly only 175 to 200 acres could be stript annually.

Live Stock		Probable Production
	10 Ewes	1,000 Lbs.
60 Ewes	80 Lambs	6,000 Lbs.
3 Bucks	Wool	480 Lbs.
50 Steers (gain)*		15,000 Lbs.
5 Brood sows (35 pigs) @ 190		6,650 Lbs.
2 Dairy cows		Milk for home consumption
4 Work stock (operator's)		
Poultry.		

*Fifty 1,000-lb. steers bought in fall sold following summer or early fall weighing 1,300 lbs.

TABLE VII.—Approximate Feed Requirements for Live Stock.

Kind of Stock	Corn	Hay	Mixed Feed, Bran, Oats, etc.	C. S. M.	Tankage	Stover
Sheep and lambs	20 Bu.	5 Tons	2,000 Lbs.	None	None	None
Hogs	400 Bu.	None	None	None	1,000 Lbs.	None
Steers	1,000 Bu.	None	None	6,000 Lbs.	None	All
Work stock	220 Bu.	7 Tons	None	None	None	None
Dairy cows	40 Bu.	3 Tons	1,000 Lbs.	None	None	None
Total	1,680 Bu.	15 Tons	3,000 Lbs.	6,000 Lbs.	1,000 Lbs.	

Disposition of Crops

Crops	Total Production	Amount Required For Feed	Salable Surplus
Tobacco*	18,000 Lbs.	None	18,000 Lbs.
Corn*	1,680 Bu.	1,680	None
Hay	15 Tons	15 Tons	None
B. G. seed	1,368	60 Bu. (Seed)	1,308

*This is the production of 15 acres of tobacco and 35 acres of corn, the tenant's part not being included.

The organization suggested provides for one hired man and one tobacco tenant. It is assumed that the tobacco tenant will grow 10 acres of tobacco and 10 acres of corn, furnishing the labor, teams and tools for these crops, for which he would get one-half of each. The yields suggested here are above average yields for central Kentucky, yet the cropping system proposed is one that would keep up fertility so that good yields could be obtained.

Many farmers with 400 acres plan to grow more than 20 acres of tobacco. If the tobacco acreage is increased the corn acreage must be decreased or a change made in the cropping system. If the first alternative is chosen corn must be bought or the live stock reduced. If the live stock is reduced the pasture will not be fully utilized. For most years possibly it would be desirable to buy the corn and fully utilize the pasture.

If the cropping system is changed so that the corn will be produced on the farm, more than 30 acres of bluegrass sod must be plowed each year or some of the land cropped with cultivated crops three consecutive years instead of two as suggested in the proposed organization. Of these alternatives possibly it would be desirable in most cases to use a second cover crop and cultivate some of the land the third year. The probable acreages of the different crops with 10 acres of tobacco substituted for 10 acres of corn and with 10 acres of tobacco and 5 acres of corn added are shown in Table VIII. The acreages of the crops suggested in the organization first proposed are shown again for comparison.

TABLE VIII.—Probable Acreage of Bluegrass and Other Crops with Different Acreages of Tobacco.

	Plan No. 1 20 Acres Tobacco	Plan No. 2 30 Acres Tobacco	Plan No. 3 30 Acres Tobacco
Tenant's tobacco	10	20	20
Operator's tobacco	10	10	10
Tenant's corn	10	20	20
Operator's corn	30	10	25
Small grain (pastured)	30	30	30
Small grain (cover crop)	30	30	45
Hay (clover)	10	10	10
Rotation pasture (clover)	20	20	20
Land to hired labor (house, lot, garden, etc.)	6	6	6
Land to tenant (house, lot, graden, etc.)	6	12	12
Non-tillable pasture	30	30	30
Waste (roads, building sites, etc.)	10	10	10
Total	172	178	193
Bluegrass, tillable	228	222	207
Total in farm	400	400	400
Available pasture	308	302	287

Plan No. 2 assumes that the farmer would buy the corn displaced by the increase in the tobacco acreage. Plan No. 3 assumes that 15 acres of the land would be seeded to a cover crop after the second cultivated crop had been harvested, and would be planted in corn the following year. Plans 2 and 3 both suggest that the added 10 acres of tobacco be grown by a tenant who would want 10 acres of corn along with the 10 acres of tobacco. A method of calculating the probable changes in the net income with plans 2 and 3 is shown in Table IX.

TABLE IX.—Probable Changes in Net Income by Using Plan 2 or Plan 3 Instead of Plan. 1.

	Plan No. 2*		Plan No. 3†	
Increase in receipts over Plan 1				
5,000 lbs. of tobbacco @ 18c	$900		$900	
Decrease in expenses over Plan 1				
Labor, seeding and stripping B. G.	3		20	
		$903		$920
Decrease in receipts over Plan 1				
Bluegrass seed	$60		$252	
Gains in steers‡	37		111	
Increase expenses over Plan 1				
Added corn bought	450			
Int., taxes, depreciation, upkeep on added tobacco barn, tenant house, etc.	300		300	
Increase seed costs			23	
		$847		$686
Differences		$56**		$234**

*This change is the substitution of 10 acres of tenant tobacco for 10 acres operator's corn.

†This change is the addition of 10 acres tobacco and 5 acres corn, thus increasing cultivated crops 15 acres.

‡With plan 2, 6 acres less pasture would be available and possibly one less steer should be kept or else the gain from pasture slightly reduced. With plan No. 3, 19 acres less pasture would be available and possibly about 3 fewer steers should be kept or else the gains from pasture proportionately reduced.

**Probable increase over plan No. 1.

In calculating the income from plan No. 1 it is assumed that the 20 acres of tobacco would yield 1,200 pounds per acre and a price of 20c per pound is suggested. With plans 2 and 3 it is assumed that the added 10 acres of tobacco would yield 1,000 pounds per acre and 18c per pound is suggested. By breaking 30 acres of bluegrass sod each year and planting only 20 acres of tobacco, the most desirable 20 acres could be selected for tobacco. However, by planting 30 acres of tobacco, all of the sod land would be planted in tobacco or some of the land planted in

tobacco the second year. With either practice it is not expected that the yield and quality of the added 10 acres would be equal to the yield and quality of the first 20 acres.

Plan No. 1 provides for 5% of the total farm area in tobacco when practically all the farm is tillable. With the yields and prices used in these calculations obviously the opportunities are not favorable for increasing the net income to any considerable extent by increasing the tobacco very much above 5% of the total farm area in a system in which bluegrass is made one of the principal crops. As the tobacco is increased above the 5% or 20 acres for a 400-acre farm corn must be bought or the land cropped more heavily. With tobacco at 20c per pound and corn at 90c per bushel the growing of tobacco for the purchase of corn is doubtful economy in the central bluegrass area. If a cropping system with a larger acreage of cultivated crop is followed eventually the crop yields will be reduced.

Sometimes a farmer feels that 40 acres is the most profitable acreage of tobacco for a 400-acre bluegrass farm. If he has a farm with a large acreage of old bluegrass the temptation to plant a large acreage in tobacco is often great. However, a greatly increased acreage of tobacco for one or two years usually will require added barns or added expense in hauling tobacco. A greatly increased acreage of tobacco for one or two years will mean less desirable land for tobacco in later years. The incentive must be great and the price outlook exceedingly favorable to overcome these added handicaps.

On the other hand it is possible that for many seasons 10 acres of tobacco would be the desirable acreage on a 400-acre farm. With an outlook for tobacco prices at around 15 cents per pound and yields around 1,000 pounds per acre it might be good practice to grow only 10 acres of tobacco instead of 20 acres on a farm of this size.

Possibly the decision between 20 and 30 acres of tobacco on a 400-acre farm can be made only after considering the present acreage of bluegrass, the tobacco price outlook for the following year and the kind of tobacco tenant obtainable. With a large part of the land in old sod, with a favorable outlook for tobacco

prices, and a good tenant, 30 acres of tobacco would likely be more profitable than 20 acres. However, with recent yields and prices it is doubtful if this practice would be profitable for any considerable period.

It is possible for a given year that on 400-acre farms in a given neighborhood one farmer would decide to grow 10 acres of tobacco, another 20 acres of tobacco and another 30 acres of tobacco and all be making the best decisions possible, in view of the variations in conditions on individual farms. The most desirable cropping system for one farmer and one farm is not necessarily the most desirable for another farmer or another farm. Yet all have much in common if considered for a period of years.

Many 400-acre farms in central Kentucky grow all the tobacco on the tenant-share basis. Especially is this true with the farms larger than 400 acres. With the tenant growing all the tobacco and an equal acreage in corn the operator's corn problem assumes a different aspect. With the tenant's corn going off the farm or to his individual stock the operator more often will find it to his advantage to buy corn.

The yields and production secured on the 586-acre farm for these years were higher for most products than those used in the proposed plan for the 400-acre organization. The prices of 1922, 1923 and 1924 were not considered unusually favorable for the staple products grown in central Kentucky.

It is intended that the proposed 400-acre organization suggest a desirable long-time combination of crops and live stock to plan for. The 586-acre organization suggests modifications that may better fit the resources and abilities of an individual farmer and the conditions at a particular time.

In this plan of organization staple enterprises which have proved to be well adapted to this region have been suggested. Some specialty live stock enterprises such as thoroughbred horses or retail dairying would in some cases give considerably higher net returns. However, an increase in the production of these specialities would affect prices more than a similar increase in the products suggested, also specialty enterprises are much

more dependent upon the special aptitudes and qualifications of the individual farm operator; hence their adoption would not be practical for any considerable part of the farmers of the section.

In planning a system of farming for central Kentucky it should be remembered that one of the individual farmer's most difficult problems is to find the most desirable combination of crops and live stock at a given time. Both bluegrass and tobacco usually are profitable crops, if handled properly, but they are most profitable only when grown with other crops, in the proper ratio. A long-time plan is desirable, but with any plan, modifications may be necessary from year to year. It is hoped that this bulletin will be suggestive in shaping the long-time plan and in reaching conclusions as to yearly modifications.